

REMARKS

In the October 23, 2006 Office Action, claims 6-9 and 14-17 stand rejected in view of prior art. In the October 23, 2006 Office Action, all of the claims stand rejected in view of prior art. No other objections or rejections were made in the Office Action.

***Status of Claims and Amendments***

In response to the October 23, 2006 Office Action, Applicants have amended claim 6 to clarify it. Thus, claims 6-9 and 14-17 are pending, with claim 6 being the only independent claim. Reexamination and reconsideration of the pending claims are respectfully requested in view of above amendments and the following comments.

***Rejections - 35 U.S.C. § 102***

In item 2 of the Office Action, claims 6, 7, 9, and 14-17 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,275,110 (Kung). In response, Applicants have amended claim 6 to clarify it.

In particular, independent claim 6 now explicitly recites that the amplification unit amplifies a radio frequency signal, the mixing unit mixes local oscillation signals with radio frequency signal, and the current source provides a bias current to the amplification unit.

With regards to the amplification unit, on page 2 of the Office Action, Q5 is identified as the amplification unit disclosed by Kung. However, Applicants respectfully assert that the differential voltage applied to bases 31 and 32 is rectified and applied as a bias voltage applied to the transistor Q5 (see column 4, lines 11-13 of Kung). Thus, Applicants respectfully assert that the signal applied to the base 28 of the amplification unit Q5 of Kung is a DC signal. Further, as stated in column 4, lines 13-17 of Kung, Applicants respectfully assert that the bias signal causes the amplification unit Q5 of Kung to turn on and to cause a bias current to flow through the amplification unit Q5 to the emitters 10 and 11 of transistors

Q1 and Q2 identified in the Office Action the mixing unit. Thus, Applicants respectfully assert that the amplification unit Q5 of Kung is provided to generate additional bias current and is not an amplification unit that amplifies a radio frequency signal applied to its input terminal as claimed.

With regards to the mixing unit, identified in the Office Action as Q1 and Q2 of Kung, Applicants respectfully assert that Q1 and Q2 fail to mix a radio frequency signal and local oscillation signals as claimed because Kung fails to disclose or to suggest an amplification unit that can be supplied to the mixing unit.

Further, Applicants respectfully assert that the signals applied to the bases 17 and 18, and 31 and 32 in the Kung invention are related if not identical (see column 3, line 63 to column 4, line 10). The definition of a mixer according to the fifth edition of *The McGraw-Hill Dictionary of Scientific and Technical Terms* is "A device having two or more inputs, usually adjustable, and a common input; used to combine *separate* audio or video signals linearly in desired proportions to produce an output signal" (emphasis added). Applicants respectfully assert that if the signals are related then they are not separate. Thus, Applicants respectfully assert that the Kung invention is not a mixer circuit because the signals are not separate.

Further, Applicants respectfully assert that the purpose of the Kung invention shown in Figure 2 of Kung relates to an amplifier circuit with dynamic biasing according to the amplitude of the input signal. Applicants respectfully assert that if the "mixing unit" Q1 and Q2 of Kung were to operate as a mixer, the frequency of the output signal would be  $\cos(wt) \times \cos(wt) = (1 + \cos 2wt)/2$  because the two input signals of Q1 and Q2 ( $v_{i+} - v_{i-}$  and  $v_{i+}' - v_{i-}'$ ) have the same frequency as  $w$ . This would mean that at the amplifier's output terminal the desired frequency ( $w$ ) would disappear and only the DC and  $2w$  frequency would remain.

Thus, the amplifier would not be an amplifier. Thus, the input of Q5 would not be an AC signal, but DC biasing voltage according to the amplitude of the input signal. Applicants respectfully assert that such a modification would destroy the object of the Kung invention.

In conclusion, Applicants respectfully assert that claim 6 of the present application recites an amplification unit, a mixing unit, and a current source. Further, the signal applied to an input terminal of the amplification unit is a RF signal that does not have any relationship with the signals applied to the first and second input terminal of the mixing unit. The mixing unit mixes the RF signal applied to an input terminal of the amplification unit with the LO signals applied to the first and second input terminal of the mixing unit. Since each bias current value of the amplification unit and the mixing unit is different, claim 6 of the present application respectively provides an optimum bias current value to the amplification unit and the mixing unit.

Applicants respectfully assert that the recited structure is not disclosed or suggested by Kung or any other prior art of record. It is well settled under U.S. patent law that for a reference to anticipate a claim, the reference must disclose each element of the claim within the reference. Therefore, Applicants respectfully submit that claim 6 is not anticipated by the prior art of record. Withdrawal of this rejection is respectfully requested.

Moreover, Applicants believe that dependent claims 7, 8, 9, and 14-17 are also allowable over the prior art of record in that they depend from independent claim 6, and therefore are allowable for the reasons stated above. Further, Applicants respectfully assert that the dependent claims are further allowable because they include additional limitations. Thus, Applicants believe that since the prior art of record does not anticipate the independent claim 6, neither does the prior art anticipate the dependent claims.

Applicants respectfully request withdrawal of the rejections.

***Rejections - 35 U.S.C. § 103***

In item 4 of the Office Action, claim 8 stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,275,110 (Kung) in view of U.S. Patent No. 6,147,559 (Fong). In response, Applicants have amended claim 6 as indicated above.

In particular, Applicants believe that independent claim 6 is allowable over Kung for the reasons stated above. Further, Fong is referenced to show a capacitor connecting first and second terminals of an amplification element, and also fails to disclose or to suggest an amplification and mixer circuit that outputs mixed signals as claimed. Since neither reference discloses or suggests this feature, Applicants respectfully assert that the combination thereof also fails to disclose or to suggest this feature.

Applicants respectfully assert that the arrangement of claim 6 is not disclosed or suggested by the prior art of record. It is well settled in U.S. patent law that the mere fact that the prior art can be modified does not make the modification obvious, unless the prior art suggests the desirability of the modification. Accordingly, the prior art of record lacks any suggestion or expectation of success for combining the patents to create the Applicants' unique arrangement of a mixer circuit.

Moreover, Applicants believe that the dependent claim 8 is also allowable over the prior art of record in that it depends from independent claim 6, and therefore is allowable for the reasons stated above. Also, the dependent claim is further allowable because it includes additional limitations. Thus, Applicants believe that since the prior art of record does not disclose or suggest the invention as set forth in independent claim 6, the prior art of record also fails to disclose or suggest the invention as set forth in the dependent claim.

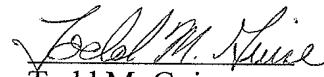
Therefore, Applicants respectfully request that this rejection be withdrawn in view of the above comments and amendments.

Appl. No. 10/775,234  
Amendment dated March 21, 2007  
Reply to Office Action of October 23, 2006

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In view of the foregoing amendment and comments, Applicants respectfully assert that claims 6-9 and 14-17 are now in condition for allowance. Reexamination and reconsideration of the pending claims are respectfully requested.

Respectfully submitted,

  
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